DOCUMENT RESUME

ED 235 570 EA 016 130

AUTHOR	Rumberger, Russell W.
TITLE	Education, Unemployment and Productivity.
INSTITUTION	Stanford Univ., Calif. Inst. for Research on Educational Finance and Governance.
SPONS AGENCY	National Inst. of Education (ED), Washington, DC.
REPORT NO	IFG-PR-83-A14
PUB DATE	May 83
GRANT	OB-NIE-G-80-0111
NOTE	34p.
PUB TYPE	Information Analyses (070) -- Viewpoints (120)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Administration; Developed Nations; Disadvantaged; *Economic Research; *Economics; Education; *Employment Patterns; Human Capital; Labor Conditions; Labor Demands; Labor Force; Minority Groups; Poverty; *Productivity; Technology; *Unemployment; Unions
IDENTIFIERS	Employment Act 1946; Full Employment and Balanced Growth Act 1978

ABSTRACT

The United States is faced with two serious economic problems: declining productivity growth and rising unemployment. These problems have become severe in the last decade. Both problems are caused by a number of factors, but experts fail to agree on which factors have most contributed to the problems. This paper examines the relationship between education, the productivity decline, and the unemployment rise. Increasing education is believed to increase productivity and reduce unemployment, but rising educational levels may have contributed to the slowdown in productivity. Research in this area has been unable to explain the decline in productivity. Thirty years ago the educational level of the unemployed was lower than that of the employed, but by 1971 the educational levels of the two groups were no longer different. Increases in educational levels may do little to decrease unemployment. Some observers believe that government and business leaders could improve production through better management and improved working environments rather than increasing economic and capital investments. Existing production techniques could also be modified to employ more labor, better utilize workers' skills and education, and still maintain profitability. Included is a bibliography of references and tables delineating the data presented. (Author/MD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED235570

IFG

Institute for Research on Educational Finance and Governance

SCHOOL OF EDUCATION STANFORD UNIVERSITY

Project Report No. 83-A14

EDUCATION, UNEMPLOYMENT AND PRODUCTIVITY

Russell W. Rumberger

May 1983

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

S. Kirkpatrick

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

EA 016 130

Project Report No. 83-A14

EDUCATION, UNEMPLOYMENT AND PRODUCTIVITY

Russell W. Rumberger

May 1983

Russell W. Rumberger is a Senior Research Associate with the Institute for Research on Educational Finance and Governance, Stanford University.

The research for this report was supported by funds from the National Institute of Education (Grant No. OB-NIE-G-80-0111). The analysis and conclusions do not necessarily reflect the views or policies of this organization.

INSTITUTE FOR RESEARCH ON EDUCATIONAL FINANCE AND GOVERNANCE

The Institute for Research on Educational Finance and Governance is a Research and Development Center of the National Institute of Education (NIE) and is authorized and funded under authority of Section 405 of the General Education Provisions Act as amended by Section 403 of the Education Amendments of 1976 (P.L. 94-482). The Institute is administered through the School of Education at Stanford University and is located in the Center for Educational Research at Stanford (CERAS).

The research activity of the Institute is divided into the following program areas: Finance and Economics; Politics; Law; Organizations; and History. In addition, there are a number of other projects and programs in the finance and governance area that are sponsored by private foundations and government agencies which are outside of the special R&D Center relationship with NIE.

Abstract

The United States currently faces two serious economic problems: declining productivity growth and rising unemployment. Both problems have escalated in recent years. And both problems will need to be solved in order for our country to return to the economic prosperity of prior years. Many business leaders, educators, and government officials view education as a key to solving both problems. Increasing education is thought both to increase productivity at the individual and societal levels, and to reduce the incidence of unemployment. Yet both notions about the efficacy of education are simplistic and have been challenged on both conceptual and empirical groups. This paper discusses the nature of these two economic problems, examines their relationships with education, and reviews the assumptions and challenges underlying these relationships.

Acknowledgment

I would like to thank Martin Carnoy and Sandra Kirkpatrick for their helpful comments, Debra Thresher for her research assistance, and Catherine O'Connor and Stephanie Evans for their secretarial assistance.

The declining growth of labor productivity has been a major economic concern for some time. Productivity grew steadily and rapidly throughout much of this century, helping the American economy to prosper and achieve a favorable competitive position on the world market. This trend began to change in the mid 1960s. Since that time, the growth rate of labor productivity has declined at an accelerating rate. During the last few years of the 1970s, productivity actually declined for the first three-year period since national productivity data were first collected in 1929.

There are two important economic reasons for reversing this trend. First, only through increases in productivity can workers' wages rise without spurring inflation or increasing labor's share of input costs. Past demands for wage increases in the private sector have often been tied to increases in productivity. Recent declines in productivity growth has limited the growth of real wages and thus slowed the growth in the standard of living. Second, productivity differences among industrialized countries help determine differences in competitiveness in the world market. The United States is generally more productive than other industrialized countries, but the size of this relative advantage has diminished in recent years. This situation threatens our country's ability to increase exports as a way of stimulating economic growth.

The problem of rising unemployment is a more recent economic concern. Unemployment has always risen during economic downturns. But during the 1970s and early 1980s, economic growth has been much more uneven than in previous decades. In addition to its cyclic nature, levels of unemployment have been steadily rising in each successive recession. By the end of 1982, 12 million workers were unemployed, the highest number since the great depression year of 1933.

The economic consequences of rising unemployment are severe, particularly for certain social groups: families headed by minority males, families headed by females, and the young. Rising unemployment increases the number of families living in poverty and, consequently, it

increases inequality in the distribution of income. Finally, the unemployed require welfare and other social support programs, further straining already burdened government budgets and hampering efforts to reduce deficits.

Education has long been viewed as a way of increasing productivity and reducing unemployment. Early studies of U.S. economic growth found that the rising education levels of American workers contributed significantly to the high economic growth rates experienced over the post-war period (Denison 1979). Many of the education and training programs started during President Johnson's Great Society era were founded on the belief that improved levels of education could help the disadvantaged help themselves out of poverty (Levin 1977).

Yet recent declines in productivity growth and increases in unemployment question these conventional views. Both of these recent trends have occurred at a time when the educational attainments of the American labor force--the employed and the unemployed alike--have continued to rise. Some critics argue that raising the education level of American workers can no longer increase productivity because jobs are not structured to utilize fully workers' educational skills. In fact, an increasing number of workers--particularly college graduates--are underemployed in their jobs, which may contribute to higher levels of workers dissatisfaction, absenteeism, and turnover that may have a negative affect on productivity (Rumberger 1981).

The educational attainments of the unemployed have risen even more dramatically than those of the employed workforce. The average education level of the unemployed no longer differs significantly from that of the employed work force (U.S. Bureau of Labor Statistics 1981, p. A-10). It is now hard to argue that the unemployed lack educational skills. This realization prompted the government to provide jobs for the hard-core unemployed rather than simply education and training (Ginzberg 1980).

The relationships between education, productivity, and unemployment may be much more complicated than many people believe. The purpose of

this paper is to explore these relationships in detail--the conventional views, the evidence used to support them, and challenges to them. The paper will first address the problem of declining productivity growth and then the problem of rising unemployment.

Education and Productivity

Productivity measures the economic output produced by the primary factors of production--labor, capital, and land. Labor productivity is the most common productivity measure; it represents the amount of economic output produced by a unit of labor input, either workers or labor hours. Total factor productivity is a less common measure: it refers to the amount of economic output produced by all the primary factors of production, expressed in total factor costs.

Interest in improving productivity has existed for some time. As early as 1950, unions tied their demand for wage increases to increases in labor productivity (National Research Council 1979, p. 26). Business leaders were less resistant to such demands because they do not increase unit labor costs. Government officials have maintained an interest in improving productivity in order to keep the United States competitive in the world market place.

There is also widespread interest in the study of productivity. Scholars and academics from a variety of disciplines have studied the causes of productivity growth and have tried to identify the factors contributing to the recent productivity slowdown. Industrial psychologists have concentrated on factors influencing individual productivity within the workplace. Business scholars and organizational sociologists have concentrated on the role of management and the structure of the firm. Economists have concentrated on the factors of production, primarily labor and capital.

The study of productivity can focus on several units of analysis. Productivity can be assessed for the economy as a whole in order to make comparisons over time or with other countries. Productivity can also be assessed for entire industries or different firms within industries.

Finally, productivity can be assessed for a particular firm, units within the firm, or individual workers. Most work thus far has concentrated on productivity for the economy as a whole and on individual differences in productivity. Intermediate levels of analysis have been hampered by a lack of suitable data.

While the basic concept of productivity is straightforward, actual measurement and analysis of productivity is quite problematic. At any level of analysis, appropriate measures of inputs and outputs must be used. For most sectors of the economy, the value of final goods and services sold in the market represents a suitable measure of output. For other sectors, such as government, there is no market measure of economic output, making it difficult to develop a measure of productivity. Economic output varies over time due to changes in factor inputs and changes in productivity: economic output per unit of input. Changes in factor inputs should account for changes in quality, such as education, as well as quantity.

Recent trends in the growth of labor productivity have prompted increased concern and renewed research activity. The United States enjoyed a high rate of productivity growth in the post-war period. From 1948 to 1964, output per hour in the private business sector increased at an average rate of 4 percent per year (Table 1). From 1964 to 1973, the average growth rate slowed to 2.8 percent per year. And from 1973 to 1981, labor productivity grew by less than 1 percent per year. During a three year period--1978 to 1980--labor productivity actually declined. Other measures of productivity show similar trends.

This alarming trend is not confined to the United States. Every advanced industrial country has experienced a slower growth rate in labor productivity during the major part of the 1970s compared to earlier periods. Although the United States produces more economic output per worker than these other countries, other economies have experienced higher growth rates in productivity than the U.S. And their recent slowdown in labor productivity has been less than in the U.S. For example, the economic output per worker in Japan increased by 7

percent per year between 1950 and 1960, compared to 2 percent in the United States (Table 2). Between 1973 and 1979, the average growth rate in Japan slowed to 3.4 percent per year, while in the U.S. it was .3 percent per year.

In the last three decades, the productivity of the Japanese workforce has increased from 15 percent to 66 percent of the U.S. rate. Other countries have experienced similar, though less spectacular, increases. These relative gains in labor productivity signal a deterioration in the competitive advantage of U.S. in the world market. It is little wonder that American business leaders and government officials are worried.

Observers have suggested a wide variety of explanations to account for the recent slowdown in productivity growth. Unfortunately, many more explanations have been offered than solid empirical evidence to support them. One of the most comprehensive analyses of the productivity slowdown has been conducted by Edward Denison (1979, 1982). Denison has analyzed the sources of U.S. economic growth for many years, using national economic output data that have been compiled since 1929. Denison's figures provide a convenient means for reviewing the various causes that have been offered to account for the recent slowdown in productivity growth.

Although Denison's estimates of labor productivity are computed somewhat differently than U.S. Labor Department estimates, they reveal similar trends. Between 1948 and 1973, output per employed worker in the nonresidential business sector increased at an average annual rate of 2.5 percent. The growth rate of productivity did fluctuate during this period, with productivity growth beginning to slow after 1963. Since 1973, however, average productivity has actually declined slightly. The growth rate changed by 2.7 percent per year compared to the earlier period. Again there has been some fluctuation in this trend, with the biggest single drop occurring in 1974.

Growth rates depend on changes in the total factor inputs as well as changes in the output produced per unit of input. The former

reflects changes in the quality and quantity of the primary inputs in production--labor, capital, and land. For example, an accelerated reduction in hours worked and a slower rate of growth in capital contributed to the slowdown in productivity growth. Some observers claim the slowdown in capital growth and its utilization have had a more severe impact on productivity growth than Denison shows (e.g. Baily 1981; Thurow 1980). Denison (1982, pp. 8-18) reviews the evidence to support these claims and concludes that most are "inappropriate."

The changing composition of the work force, with increasing proportions of young workers and females, also tends to reduce productivity growth. Yet this trend has continued for some time and therefore accounts for very little of the recent slowdown in growth rates. Altogether, changes in total factor inputs explain only 14 percent of the total deterioration in productivity growth.

The change in the amount of output produced per unit of input accounts for most of the change in total labor productivity. Denison has identified several particular factors that have contributed to the slowdown. Improved resource allocation--changes in the distribution of workers among sectors of the economy--helped contribute to the decline. The movement of labor from farming to nonfarming activities contributed to productivity growth during the 1948-73 period because nonfarming activities are generally more productive. But this movement all but stopped during recent times, removing one important source of productivity growth.

Some observers claim that employment growth in the service sector, where average productivity is lower than other sectors of the economy, has further contributed to the productivity slowdown (e.g., Thurow 1980, p. 86). But Denison (1979, p. 142) and others (National Research Council 1979, p. 155) argue that service industries vary widely in their average productivity level and that, altogether, this trend has not contributed much to the productivity slowdown.

Changes in the legal and human environment have also contributed to productivity slowdown. These include increased regulations for reducing

poliution and improving workers' health as well as the increased costs of fighting crime. Denison estimates these changes made only a small contribution to the productivity slowdown. Others claim that they made a larger negative impact (e.g., National Research Council 1979, p. 159; Christainsen and Haveman 1981).

Changes in the economies of scale and irregular factors, such as labor disputes and the intensity of demand, also contributed to the productivity slowdown. But these factors, too, account for only a small proportion of the slowdown, although others again claim that their contribution is greater than Denison shows (e.g., Nadiri and Schankerman 1981; Thurow 1980, p. 86).

The biggest factor contributing to the slowdown is the residual, what Denison labels "advances in knowledge and not elsewhere classified." The former component captures "the gain in measured output that results from the incorporation into production of new knowledge of any type--managerial and organizational as well as technological" (Denison 1982, p. 22).

The residual alone accounts for almost two-thirds of the change in productivity growth between the earlier post-war period and more recent times. The change in the size of this residual first prompted Denison (1979, p. 4) to remark that its cause remained a "mystery." As he recently clarified:

> By this I did not mean that no one had a hypothesis as to the cause. Quite the opposite! There as a surfeit of alleged causes, not a scarcity. In my concluding chapter [Denison 1979, Chapter 9] I stated, analyzed, and evaluated 17 different causes that had been advanced by various observers as the cause of the slowdown. None in my opinion, were demonstrably able to explain more than a small part--if any--of the slowdown. (Denison 1982, p. 23)

In his more recent paper, in light of further evidence, his original conclusion still holds.

Denison acknowledges that a variety of factors may have contributed to the recent slowdown. He groups them into seven areas. Two have to do with the relationship between business and government, one with the legal and human environment, and one constitutes a residual category. The first three represent areas frequently addressed by other observers of this problem:

> 1. Changes in personal characteristics of workers that I [Denison] have not measured, especially how hard they work.
>
> 2. Changes in the extent to which the allocation of individual workers among individual jobs and of capital among individual types of capital departs from that which would maximize national income.
>
> 3. Changes in the gap between actual production technique and best technique that results from obstacles imposed by governments, labor unions, and others outside the firm.

As Denison goes on to point out, "the main problem the presence of the residual series presents is neither conceptual ambiguity nor statistical inaccuracy ...but inability to allocate the combined contribution of these several disparate influences among them" (Denison 1982, p. 23).

Many scholars have focused on the last area, addressing obstacles within firms in addition to the factors listed by Denison. Good industrial relations--between workers, management, and unions--are claimed to increase productivity in firms (Marshall 1981, p. 151; Nelson 1981, p. 1044). Changes in traditional organization of work, such as those that further workers participation in decision-making, are also claimed to improve productivity (Marshall 1981, p. 158; Rosenberg and Rosenstein 1980). Good management plays an important role as well (Hayes and Abernathy 1980).

While evidence exists to support these claims, it is much more difficult to show that changes in these and other factors were responsible for the recent slowdown in aggregate productivity growth. As Denison correctly states, the slowdown in labor productivity growth may have been accompanied by a host of other trends in factors supposedly linked to productivity, but such an association does not establish cause and effect.

In general, since economic output results from a number of input factors, it is difficult to ascertain what causes a change in the output associated with any particular factor such as labor. As a recent review of productivity conducted by the National Research Council (1979) cautions:

> ...one cannot infer from a rise in output per employee-hour that employees are more skilled or that they are working harder than they were in the previous period: either or both may be the source of the rise in productivity in whole or in part, but need not be. The entire rise could be attributable to an increase in capital inputs, to higher rates of capacity utilization, or to technological change. It would even be possible to have a technological change that raised output per employee-hour that, at the same time, reduced the level of skill or difficulty of work required of employees (pp. 19-20).

Out of all the factors that Denison explicitly accounted for in his analysis, only one made a positive contribution to the change in growth rates from the earlier to the more recent period: education (see Table 3). The contribution of education to productivity growth increased from the first to the second period because of the continued growth in the educational attainments of the American workforce:

> Educational background decisively conditions both the types of work a person is able to perform and his proficiency in any particular occupation. A continuous upward shift in the educational background of the American labor force has upgraded the skills and versatility of labor and contributed to the rise in national income (Denison 1979, p. 42).

In order to measure the contribution of education to productivity growth, Denison and other practitioners of growth accounting need to identify productivity differences among workers with different levels of education. As Denison (1979, p. 44) states, "such information can be inferred from data on earnings." But even with adjustments for other factors that influence the relationship between education and earnings, such as race, sex, and experience, this inferrence is based on the assumption that:

> In a perfectly competitive labor market, such differences reflect the marginal productivity of schooling. To the extent that labor markets are not competitive, the resulting esti-

> mates of growth from this source are biased, although the size and direction of the bias are difficult to determine without further analysis (National Research Council 1979, p. 147).

This assumption is based on neoclassical economic theory, the paradigm that underlies much of the research on productivity.

Proponents of this view have offered several explanations of how education enhances productivity. Welch (1970, p. 42) suggests that there is an allocative effect to education, meaning that "increased education may enhance a worker's ability to acquire and decode information about costs and productive characteristics of other inputs." Similarly, Schultz (1975) argues that education enhances a worker's "ability to deal with disequilibria." Others claim that education enhances productivity because it is complementary to other inputs (such as capital) in the firm or because it enables workers to adapt to technological change (Nelson and Philips 1966; Griliches 1969; Welch 1970).

Little direct evidence exists to support these claims, however. The one exception is the case of agriculture (Jamison and Lau 1982). Other empirical evidence contradicts these views. Some shows that workers' earnings are not proportional to marginal productivity (Gottschalk 1978; Medoff and Abraham 1981). Differences in earnings associated with more direct measures of skills, such as standardized test scores, are much smaller than those associated with education (Young and Jamison 1974; Meyer and Wise 1982).

Research on education and productivity has thus far been unable to explain the serious decline in productivity. Richard Nelson (1981), in a major review of research on productivity, calls for an expanded approach:

> It is my belief that research, guided by the neoclassical paradigm, has reached a stage of sharply diminishing return, with many important questions still not resolved adequately. Further, a sizable portion of research on productivity growth, while perhaps initially undertaken to widen and deepen the simple neoclassical model, has identified phenomena and relationships not treated adequately, or even denied, by that theory (p. 1032).

Alternative frameworks challenge the neoclassical assumption that differences in market earnings reflect differences in productivity. Thurow (1975) develops one competing framework: a job competition model where marginal products and earnings are associated with jobs, not individuals. Individuals are allocated to available jobs based on an array of personal characteristics, such as education, that suggest to the employers the cost of training those individuals in the skills necessary to perform their jobs. Because this allocation is based on available supplies of both individuals and jobs, workers may possess more educational skills than their jobs require. Other views of the labor market, such as screening theory, endorse this notion (e.g., Taubman and Wales 1974). Recent evidence suggests that an increasing number of workers are finding jobs for which they are overqualified (Rumberger 1981). Further evidence suggests that this excessive education is rewarded at a lower rate than education generally, implying that "overeducation" may have a detrimental effect on productivity (Duncan and Hoffman 1981).

In the neoclassical view of the firm, employers are assumed to organize production in order to maximize profits given available technology and market prices. Economists acknowledge that capital may not be fully utilized at any point in time and have developed a measure of capacity utilization. But they do not acknowledge that skills of workers--so called human capital--also may not be fully utilized in the firm. Yet organizational theorists and industrial psychologists have long argued that a variety of other factors may intervene and prevent full utilization of workers' education and training (Rumberger 1983). These include the way work is organized and particularly the relationship between the characteristics of workers and the characteristics of their jobs (Vroom 1964; Dunnette and Fleishman 1982).

In summary, analysis of productivity based on the neoclassical model of competitive labor markets has thus far failed to account for the recent slowdown in productivity growth. In this framework, increased education contributes to productivity growth which is

reflected in earnings differences among workers with different educational attainments. Yet empirical evidence fails to support this assumption. Moreover, alternative views of labor markets and the operation of firms suggest that the education embodied in workers is not always utilized effectively. Effective utilization depends upon a number of other factors, such as the way work is organized. While evidence supports some of these alternative views, they have not been linked directly to the recent productivity slowdown. That linkage awaits further research.

Education and Unemployment

Unemployment remains one of this country's most pressing economic problems. The unemployed suffer individually from being unable to sustain their own economic well-being through work. Collectively, they represent an unused and wasted economic resoure. By not working, the unemployed not only fail to contribute to government revenues through taxes, they require government assistance in the form of unemployment and welfare payments. The economic plight of the unemployed has worsened recently because fewer have received unemployment benefits (U.S. Congressional Budget Office 1983, p. 89). Unemployment is a social problem as well: the unemployed demonstrate higher incidences of stress, crime, and illness than the population as a whole (Brenner 1976).

Since the Great Depression in the 1930s, the government has made an explicit commitment to promote full employment in the economy. The first statement of this commitment was in the 1946 Employment Act:

> The Congress hereby declares that it is the continuing policy and responsibility of the federal government to use all practical means...for the purpose of creating and maintaining ...conditions under which there will be afforded useful employment opportunities...for those able, willing, and seeking to work (as quoted in Stern 1982, pp. 12-13).

This commitment was reaffirmed in the 1978 Full Employment Act, better known as the Humphrey-Hawkins Act.

The government's commitment to full employment has often been more ideoligical than real. This commitment has also conflicted with other economic goals, particularly tne goal of reducing the high levels of inflation that have plagued the economy since the early 1970s. While the two problems may not be causally related in the long run, in the short run the measures used to fight inflation help increase the rate of unemployment (U.S. Congressional Budget Office 1983, p. 99). On the other other hand, efforts to lower unemployment may tend to raise inflation. Some economists have thus defined the "natural unemployment" rate as the threshold level under which unemployment may tend to increase inflation (Sawhill and Bassi 1980). The natural rate of unemployment, which was in the range of 3 to 4 percent in the 1950s and 1960s, may be as high as 7 percent in the 1980s (U.S. Congressional Budget Office 1983, p. 84). In other words, if inflation rates are to remain at acceptable levels, 7 percent or about 7 million persons in 1982, will have to do without jobs.

The incidence of unemployment has steadily increased in the post World War II period. Although unemployment has always fluctuated due to the cyclical nature of economic activity, the average level of unemployment has tended to increase in recent years. Unemployment in the decades of the 1950s and the 1960s averaged less than 5 percent, while in the 1970s it averaged over 6 percent (Figure 1). By the end of 1982, unemployment stood at 10.8 percent or 12 million persons, the highest rate since 1940. Moreover, since the mid 1960s, the lowest unemployment rate achieved after each upward swing of the economy has been higher than the rate achieved in the previous cycle (U.S. President 1983, Table B-3[illegible]). It is this accelerating trend in the average level of unemployment that suggests this current problem is much more serious than existed in the previous 4 decades.

Not only is unemployment a problem for the economy generally, it is particularly severe for some social groups. Young workers and minorities have always experienced a higher unemployment rate than white adults (Table 4). Women who maintain their own families are also more

likely to be unemployed than other workers. Another alarming trend is that these differences have increased in recent times. For example, the unemployment rate among blacks and other minorities was only 2 percentage points higher than the national average in 1948, but by 1982 this difference had increased to almost 8 percentage points. A similar trend has occurred among youth. The burden of unemployment has thus become even more unequal in recent times.

Government estimates may understate the severity of the unemployment problem. To be counted as unemployed by the government, a worker must have actively looked for work during the preceeding four weeks. Those who have quit looking for work and have thus withdrawn from the labor force are not counted as unemployed. If these so called "discouraged" workers had been counted in the labor force, they would have increased the unemployment rate from 5.4 percent to 6.8 percent in 1973. Some workers are working part-time when they would rather work full-time and others are working for wages that keep them below the poverty level. Including these so call "underemployed" workers would have raised the unemployment rate in 1973 to over 16 percent (Clogg 1979, Table 2.1). Still other workers may be underemployed because they work in jobs that are subject to frequent layoffs or in jobs for which they are overqualified (U.S. Commission on Civil Rights 1982, Table 2.1). More comprehensive measures of underemployment suggest that both the quantity and the quality of jobs in the economy should be considered in discussions of adequate employment opportunities.

The causes of unemployment are not easily understood. As in the case of productivity, it is much easier to observe trends in other factors supposedly related to unemployment than to show that these factors actually cause the observed trends. Nonetheless, economists have identified several categories of unemployment that are associated with different causal factors. The first category is cyclical unemployment--the unemployment due to depressed economic activity. The Congressional Budget Office (1983, pp. 92, 102) suggests that about 5 of the 11 percent unemployment rate in 1982 was due to the current economic

recession. The remaining 6 percentage points was due to two noncyclical components: frictional unemployment (3-4 percentage points) and structural unemployment (2-3 percentage points).

Frictional unemployment is caused by workers voluntarily leaving jobs and by workers entering or reentering the labor market (Sorkin 1974, p. 10). Frictional unemployment is generally not a major concern, since some individuals will always be looking for work at any one point in time. Because youth and women, who have constituted an increasing share of the labor market in the last 30 years, are more likely to enter and leave the labor market, the rate of frictional unemployment has tended to increase over time (U.S. Congressional Budget Office 1983, p. 102).

Structural unemployment is due to a mismatch between the skills and abilities of workers and the requirements of jobs (Sorkin 1974, p. 13). This includes geographic dislocations and workers who are displaced because of plant closings. Structural unemployment impacts certain workers more than others. Young people, for example, experience higher rates of unemployment in good economic times as well as bad. Structural unemployment may grow in the future as more and more workers lose their jobs and as the economy experiences an accelerating rate of industrial and geographic restructuring (Bluestone and Harrison 1982; Sheingold 1982).

To the extent that unemployment, particularly structural unemployment, is due to workers' having inadequate skills, then education and training can play a role in reducing it. Workers with more schooling have always enjoyed lower unemployment rates than workers with less schooling. For example, college graduates had an unemployment rate that was one-third the national rate in 1950, while persons who did not complete high school had a rate 20 percent higher than the national rate (Table 5). This relative advantage has remained over the last three decades. In fact, workers with less than a high school education were relatively worse off in 1979 than in 1950.

According to neoclassical economic theory, education develops the

skills and abilities--human capital--that make workers more productive in the workplace. Thus raising individuals' education will improve their prospects for finding and maintaining employment. While workers with more education have a relative advantage in securing the available jobs in the labor market, raising the education level of the labor force as a whole may do little to reduce unemployment because workers with more schooling may simply displace workers with less schooling (Thurow 1975). In other words, its not simply the absolute level of schooling that improves a worker's likelihood of securing employment, but the level of schooling relative to other workers.

While the relative unemployment rate of workers by schooling level has changed very little over the last 3 decades, the absolute level of schooling of both the employed and unemployed has continued to increase (Table 5). In 1950, most unemployed workers had not completed high schooling. By 1979, however, the majority of unemployed workers had completed high school and almost one out of five unemployed workers had completed at least one year of college. Thirty years ago, the average education level of the unemployed as significantly lower than the employed workforce. But over this period the education level of the unemployed workforce has grown faster than the education level of the employed workforce. By 1971 the median education level of the unemployed was no longer different statistically from that of the employed work force (Deutermann 1971, p. 31). Thus increased education levels alone may do little to reduce unemployment.

This realization has changed the focus of many government sponsored education and training programs. The federal government's massive education and training programs of the 1960s were guided by the premise that improved education and training would help reduce poverty and unemployment, primarily among the disadvantaged (Levin 1977; Ginzberg 1980). Yet despite the billions of dollars poured into these programs, many of which were directed specifically toward minority and disadvantaged groups, unemployment has reached record levels. And these targeted groups continue to experience higher relative rates of

unemployment. While government education and training programs will always play an important role in providing important job skills, their focus has been enlarged to provide directly for jobs (Ginzberg 1980).

Summary and Conclusions

The problems of declining productivity growth and rising unemployment have become severe in the last decade. Experts have suggested that both problems are caused by a number of factors, but fail to agree on the relative importance of these factors. There is more agreement that the current economic recession is a major cause of recent high unemployment rates and has played a part in slowing productivity growth. Yet the decline in productivity began years before the current economic downturn which suggests other causal factors.

In general, education has not contributed to the growth of these problems, but rather has been an important factor helping to curb them. Yet rising education levels may have contributed to the slowdown in productivity as an increasing number of college educated workers have become underemployed and possibly less productive in their jobs.

The government not only faces the challenge of improving productivity growth and reducing unemployment. The Full Employment and Balanced Growth Act of 1978 actually sets a number of economic goals (as outlined in Sawhill and Bassi 1980, p. 162):

-reducing unemployment (4 percent by 1983)
-reducing inflation (3 percent by 1983), provided the achievement of other goals is not impeded
-achieving balanced growth and gains in productivity and real income
-improving the balance of trade
-achieving a balanced federal budget

While inflation has been reduced over the last year, largely because of the current economic recession and falling oil prices, the other goals have been far more elusive.

In order to achieve any particular economic goal, it may be necessary to sacrifice another. For example, the high interest rates maintained by the Federal Reserve Board during the initial stages of the

current recession helped to curb demand and reduce inflation, but they also contributed to the economic slowdown and pushed the unemployment rates to higher levels. Some economists and government officials believe that it may be necessary to live with an unemployment rate--the "natural unemployment rate"--of 6 or 7 percent in order to keep inflation in check.

Many experts and government officials believe that the key to achieving these goals, particularly to improve productivity and lower unemployment, is to stimulate economic growth. In the initial stages of economic recovery, slack economic resources--labor and capital--will be more fully utilized to respond to increased economic demand. This increased activity should increase labor productivity. Continued demand for goods and services will then force the expansion of business, the hiring of more workers, and hence the lowering of unemployment. Yet even with a projected economic growth rate of 3 to 4 percent per year, both the Council of Economic Advisors and the Congressional Budget Office project that unemployment rates will remain over 9 percent until at least 1985 and possibly as high as 7 percent until 1988 (U.S. President 1983, p. 144; U.S. Congressional Budget Office 1983, p. 7).

While a high rate of sustained economic growth will no doubt improve productivity and help reduce unemployment, a high rate of growth may be impossible to achieve. Much depends on the world economic climate, including the price of oil and world-wide economic demand, factors that are beyond the control of the United States. It is likely that the United States may never experience the same high rate of growth as it enjoyed in the 1950s and 1960s. Future economic growth could increase by only 1 or 2 percent, an outlook held by many European governments.

There are alternative strategies for improving productivity and employment, but again some strategies may improve one at the expense of the other. For example, labor productivity may be increased by further capital investment, but much of that investment may be used to displace workers and thus raise unemployment. Companies might use further

capital spending to relocate plants from one region of the country to another, which only changes the geographic distribution of unemployment and may, in fact, raise aggregate unemployment (Bluestone and Harrison 1982).

Rather than relying on increased levels of economic growth and capital investment, some observers believe that government officials and business leaders should consider how to better utilize the capital and human resources that currently exist (Carnoy, Shearer, and Rumberger 1983). They point out that productivity could be greatly improved simply through better management techniques and an improved working environment (Hayes and Abernathy 1980; Marshall 1981; Stern 1982). Existing production techniques could also be modified that would employ more labor, better utilize the existing skills and education of workers, and still maintain profitability (Carnoy and Shearer 1980; Levin forthcoming).

Just as education has not contributed significantly to declining productivity and rising unemployment, it is unlikely to play a major role in overcoming these problems. There will always be a social as well as an economic need to improve the level and quality of education received by the citizens of this country, especially among the most disadvantaged members. This improvement may help solve some of our current economic problems, but much more depends on how effectively these human resources are utilized in our economic system.

References

Baily, Martin Neil. 1981. "The Productivity Growth Slowdown and Capital Accumulation." American Economic Review 71 (May): 326-331.

Bluestone, Barry, and Bennett Harrison. 1982. The Deindustrialization of America. New York: Basic Books.

Brenner, M. Harvey. 1976. Estimating the Social Costs of National Economic Policy: Implications for Mental and Physical Health, and Criminal Aggression. Study prepared for the Joint Economic Committee, U.S. Congress. Washington, D.C.: U.S. Government Printing Office.

Carnoy, Martin, and Derek Shearer. 1980. Economic Democracy. White Plains, N.Y.: M.E. Sharp.

Carnoy, Martin; Derek Shearer; and Russell Rumberger. 1983. A New Social Contract. New York: Harper and Row.

Christainsen, Gregory B., and Robert H. Haveman. 1981. "Public Regulations and the Slowdown in Productivity Growth." American Economic Review 71 (May): 320-325.

Clogg, Clifford C. 1979. Measuring Underemployment. New York: Academic Press.

Denison, Edward F. 1982. "Accounting for Slower Economic Growth: An Update." Paper prepared for Conference on International Comparisons of Productivity and Causes of the Slowdown, American Enterprise Institute for Public Policy Research, Washington, D.C., September 30.

Denison, Edward F. 1979. Accounting for Slower Economic Growth. Washington, D.C.: The Brookings Institution.

Deutermann, William V. 1971. "Educational Attainment of Workers, March 1971." Monthly Labor Review 94 (November): 30-35.

Duncan, Greg J., and Saul D. Hoffman. 1981. "The Incidence and Wage Effects of Overeducation." Economics of Education Review 1 (Winter): 75-86.

Dunnette, Marvin D., and Edwin A. Fleishman, eds. 1982. Human Performance and Productivity. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Ginzberg, Eli, ed. 1980. Employing the Unemployed. New York: Basic Books.

Gottschalk, Peter T. 1978. "A Comparison of Marginal Productivity and Earnings by Occupation." Industrial and Labor Relations Review 31 (April): 368-378.

Griliches, Zvi. 1969. "Capital-Skill Complementarity." Review of Economics and Statistics 51 (November): 465-468.

Hayes, Robert H., and William J. Abernathy. 1980. "Managing Our Way to Economic Decline." Harvard Business Review 58 (July-August): 67-77.

Jamison, Dean, and Lawrence Lau. 1982. Farmer Education and Farm Efficiency. Baltimore: Johns Hopkins University Press.

Levin, Henry M. Forthcoming. "Raising Employment and Productivity with Producer Cooperatives." In Human Resources: Concepts and Measurement, edited by Paul Streeten and Harry Maier. London: Macmillan and Company.

Levin, Henry M. 1977. "A Decade of Policy Developments in Improving Education and Training Programs for Low-Income Populations." In A Decade of Federal Antipoverty Programs, edited by Robert H. Haveman, pp. 123-188. New York: Academic Press.

Marshall, Ray. 1981. "Productivity, Industrial Relations, and Management Systems." In Trade Unionism in the United States, edited by James L. Stern, pp. 136-166. Madison: Industrial Relations Research Institute, University of Wisconsin-Madison.

Medoff, James L., and Katherine G. Abraham. 1981. "Are Those Paid More Really More Productive? The Case of Experience." Journal of Human Resources 16 (Spring): 186-217.

Meyer, Robert H., and David A. Wise. 1982. "High School Preparation and Early Labor Market Experience." In The Youth Labor Market Problem, edited by Richard B. Freeman and David A. Wise, pp. 277-339. Chicago: University of Chicago Press.

Nadiri, M. Ishaq, and M. A. Schankerman. 1981. "Technical Change, Returns to Scale, and the Productivity Slowdown." American Economic Review 71 (May): 314-319.

National Research Council. 1979. Measurement and Interpretation of Productivity. Washington, D.C.: National Academy of Sciences.

Nelson, Richard R. 1981. "Research on Productivity Growth and Productivity Differences: Dead Ends and New Departures." Journal of Economic Literature 19 (September): 1029-1064.

Nelson, Richard R., and Edmund S. Phelps. 1966. "Investment in Humans, Technological Diffusion, and Economic Growth." American Economic Review 56 (May): 69-75.

Rosenberg, Richard D., and Eliezer Rosenstein. 1980. "Participation and Productivity: An Empirical Study." Industrial and Labor Relations Review 33 (April): 355-367.

Rumberger, Russell W. 1983. "A Conceptual Framework for Analyzing Work Skills." IFG Project Report No. 83-A8. Stanford: Institute for Research on Educational Finance and Governance, Stanford University.

Rumberger, Russell W. 1981. Overeducation in the U.S. Labor Market. New York: Praeger Publishers.

Sheingold, Steven. 1982. "Dislocated Workers: Issues and Federal Options." Background paper, Congressional Budget Office. Washington, D.C.: U.S. Government Printing Office.

Schultz, Theodore W. 1975. "The Value of the Ability to Deal with Disequilibria." Journal of Economic Literature 13 (September): 827-846.

Sorkin, Alan L. 1974. Education, Unemployment, and Economic Growth. Lexington, Mass.: Lexington Books.

Stern, David. 1982. Managing Human Resources: The Art of Full Employment. Boston: Auburn House.

Taubman, Paul, and Terence Wales. 1974. Higher Education: An Investment and a Screening Device. New York: McGraw-Hill.

Thurow, Lester C. 1980. The Zero-Sum Society. New York: Basic Books.

Thurow, Lester C. 1975. Generating Inequality. New York: Basic Books.

U.S. Bureau of Labor Statistics. 1981. "Educational Attainment of Workers, March 1979." Special Labor Force Report 240. Washington, D.C.: U.S. Government Printing Office.

U.S. Bureau of the Census. 1953. U.S. Census of the Population: 1950. Vol. 4. Washington, D.C.: U.S. Government Printing Office.

U.S. Commission on Civil Rights. 1982. Unemployment and Underemployment Among Blacks, Hispanics, and Women. Washington, D.C.: U.S. Government Printing Office.

U.S. Congressional Budget Office. 1983. The Outlook for Economic Recovery. Washington, D.C.: U.S. Government Printing Office.

U.S. President. 1983. Economic Report of the President. Washington, D.C.: U.S. Government Printing Office.

Vroom, Victor H. 1964. Work and Motivation. New York: John Wiley and Sons.

Welch, Finis. 1970. "Education in Production." Journal of Political Economy 78 (January-February): 35-59.

Young, Kan-Hau, and Dean T. Jamison. 1974. "The Economic Benefits of Schooling and Compensatory Reading Education." Princeton: Educational Testing Service, December. Mimeo.

Table 1

Average Annual Growth Rates of Economic Output, Employment, Productivity, and the Unemployment Rate: 1948-82

	1948-64	1964-73	1973-82
Economic output (real GNP)	4.93	4.80	1.96
Employment	1.17	2.53	1.89
Productivity			
1. Output/worker[a]	3.16	1.85	.01
2. Output/hour, business sector[b]	4.02	2.81	.74
3. Output/hour, nonfarm business sector[b]	3.14	2.45	.55
Unemployment rate	2.30	- .64	10.9

[a]Real GNP per employed worker

[b]Gross domestic product per hour of all employed workers

Source: U.S. President (1983), Tables D-2, 29, and 40

Table 2

Productivity and Productivity Growth, Selected Countries:
1950 - 1979

	Productivity[a] (as percent of U.S.)			Productivity[a] Growth (average annual rate of change)		
	1950	1970	1979	1950-60	1960-73	1973-79
United States	100	100	100	1.7	2.1	.3
Germany	37.3	71.3	87.9	4.8	4.3	3.1
France	42.4	71.0	88.8	4.3	4.8	2.9
United Kingdom	53.4	51.4	59.4	2.3	3.0	1.1
Japan	15.5	48.7	66.4	6.9	8.9	3.4

[a]Real Gross Domestic Products per employed person

Source: Marshall (1981), Tables 1 and 2

Table 3

Growth Rates and Sources of Growth of Productivity[a]:
1948 - 1981

	1948-73	1973-81	Change
Sector national income	2.46	- .22	-2.68
Total factor input	.47	.10	- .37
Labor	.12	- .01	- .13
Hours	- .24	- .41	- .17
Age-sex composition	- .17	- .21	- .04
Education	.53	.61	.08
Capital	.39	.18	- .21
Land	- .04	- .07	- .03
Output per unit of input	1.99	- .32	-2.31
Improved resource allocation	.37	.04	- .33
Legal and human environment	- .04	- .21	- .17
Economics of scale	.42	.31	- .11
Irregular factors	- .18	- .20	- .02
Advances in knowledge and other	1.42	- .26	-1.68

[a]National Income per employed person in the nonresidential business sector.

Source: Denison (1982), Table 1

Table 4

Employment and Unemployment Rates, and Growth Rates, by Selected Demographic Characteristics, 1948 - 1982

	Number			Average Annual Growth Rate	
	1948	1973	1982	1948-73	1973-82
Employment (millions of persons)	58.3	85.1	99.5	1.8	1.9
Both sexes, 16-19 years old	4.0	7.2	6.5	3.2	- 1.1
Males, 20 years old and over	39.4	48.3	52.9	0.9	1.1
Females, 20 years old and over	14.9	29.5	40.1	3.9	4.0
Unemployment rate	3.8	4.9	9.7	1.2	10.9
Both sexes, 16-19 years old	9.2	14.5	23.2	2.3	6.7
Males, 20 years old and over	3.2	3.3	8.8	0.1	18.5
Females, 20 years old and over	3.6	4.9	8.3	1.4	7.7
White	3.5	4.3	8.6	0.9	11.1
Black and other	5.9	9.0	17.3	2.1	10.2
Women who maintain families	---	7.1	11.7	---	7.2

Source: U.S. President (1983), Tables B-30, 31, and 33

Table 5

Education Level of the Employed and Unemployed, and Relative Unemployment Rates by Education Level: 1950 and 1979

Education Level		Education Level (percentage distribution)				Relative Unemployment Rate[a]	
		Employed		Unemployed			
		1950	1979	1950	1979	1950	1979
Elementary:	0 - 8 years	41.0	8.7	51.3	11.2	124	126
High school:	1 - 3 years	19.4	14.9	23.7	32.0	120	200
	4 years	24.1	40.1	17.2	28.0	71	95
College:	1 - 3 years	8.1	17.9	5.0	12.3	61	70
	4+ years	7.4	18.4	2.8	6.5	33	38
Total		100.0	100.0	100.0	100.0	100	100

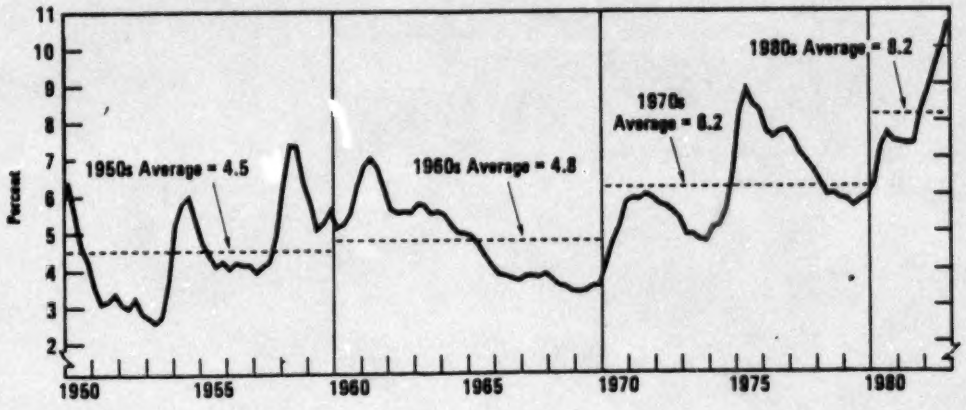
[a]Relative unemployment rate equals the absolute unemployment rate within each education level divided by the unemployment rate for all workers (x100).

Note: Figures are for all workers 16 years old and over.

Sources: U.S. Bureau of the Census (1952), Table 9; U.S. Bureau of Labor Statistics (1981), Table B.

Figure 1

Unemployment Rates for All Workers: 1950 - 1982



Source: U.S. Congressional Budget Office (1983), Figure 25